

PROPERTY PLANNING COMMON ELEMENTS

COMPONENTS OF MASTER PLANS

HABITATS AND THEIR MANAGEMENT

White Birch

Description

This cover type is comprised of >50% basal area in white birch (also called paper birch). White birch occurs throughout the state, though is more abundant in northern Wisconsin than in the south. It grows on a wide range of soils, though tends to develop best on well to moderately drained loamy soils and grows comparatively poorly in both dry and wet sites. The most common associates in white birch-dominated stands are aspen and red maple. Other common associates include red oak, white oak, balsam fir, white pine, red pine, white cedar, and sugar maple. Many other species occur as occasional associates in white birch stands.

White birch is an early-successional, opportunistic species adapted to disturbance. Historically, it was found as a strong associate in red and white pine dominated forests of the Northern Highland and less frequently as an associate in boreal forests in mesic sites along Lake Superior and Lake Michigan. It was also widespread as a component of several other forest types (e.g., northern hardwoods, mixed coniferous-deciduous forests), but likely not abundant. Its bark is thin and very flammable and thus very susceptible to top-killing from fire, but it can sprout vigorously from the root collar and has abundant, light, wind-dispersed seeds. These characteristics enable it to quickly colonize burned areas where fire has exposed the mineral soil that white birch seeds need to germinate. In these situations, it is capable of forming pure or nearly pure stands. It is shade-intolerant, however, and in older forests would have been restricted to openings created by fire or windthrow.

Currently, most white birch occurs as part of the aspen (often referred to as aspen-birch) cover type and, to a lesser extent, the northern hardwood type. In southern Wisconsin, it is part of the oak-hickory type. The aspen-birch cover type is now abundant and widespread in northern Wisconsin, but virtually all these forests are anthropogenic in origin and occupy sites formerly vegetated with very different communities. The hot slash fires that burned both during and after the widespread heavy logging that followed Euro-American settlement eliminated seedlings of many tree species as harvest was eliminating the seed sources. This allowed “pioneer” species like aspen and birch to invade large areas formerly occupied by forest types ranging from spruce-fir to pine barrens. The aspen-birch cover type peaked in abundance in the 1930s and has declined somewhat since then, though it remains far more abundant than in presettlement times. However, white birch is less abundant than aspen and is regenerating poorly or not at all in many parts of northern Wisconsin. The volume of white birch has declined significantly in the state since the early 1980s as a result of both natural succession and increased mortality (high mortality relative to growth). White birch has the highest ratio of mortality to growth and the lowest ratio of growth to volume of any species in the state.

White birch is a valuable wildlife tree, used for food and shelter by a wide variety of species. Its leaves, twigs, and bark provide food for browsing and gnawing mammals in summer, fall, and winter. Its seeds, buds, and catkins are important winter food for birds and small mammals. Migrating landbirds feed on insects attracted to white birch flowers in the early spring. It is a short-lived tree with soft wood and is prone to forming cavities, which are used by cavity-dependent species, and its flaking bark is used for nesting material and shelter by birds and small mammals.



White birch is considered a “cultural keystone species” to the Great Lakes Ojibwe, who have used primarily the bark of the tree but also the leaves, branches, roots, and sap for a variety of purposes including crafts, shelter, medicines, ceremonial purposes, and food sources.

Ecological Landscape Opportunities

White birch occurs throughout the state, but is much more abundant in some regions than in others. Almost 50% of the white birch acreage is found within the Forest Transition, North Central Forest, and Northern Highland Ecological Landscapes (ELs), with another significant acreage in the Western Coulee and Ridges. The ELs below are listed in decreasing order of white birch acreage.

- North Central Forest
- Western Coulee and Ridges
- Forest Transition
- Northern Highland
- Superior Coastal Plain
- Northwest Sands
- Northwest Lowlands
- Central Sand Hills
- Northern Lake Michigan Coastal
- Northeast Sands
- Central Lake Michigan Coastal
- Central Sand Plains
- Western Prairie
- Southeast Glacial Plains

Rare Species

To learn more about Species of Greatest Conservation Need (SGCN) associated with white birch forests based on the findings in [Wisconsin’s 2015 Wildlife Action Plan](#), visit the [Northern Forest communities page](#) and click on “Aspen-Birch”.

Threats

- The volume of white birch has declined significantly in the past several decades as a result of natural succession and of mortality that exceeds growth.
- White birch and aspen are common associates and are often managed together, yet methods typically used to regenerate aspen often are not effective for white birch. Furthermore, aspen can be a significant competitor to white birch and often assumes dominance.



- White birch currently lacks age-class diversity. The youngest and oldest age classes currently are underrepresented. An age class structure that includes all developmental stages maximizes benefits to wildlife by providing a range of structural conditions.
- White birch is a boreal species adapted to cold climates, and is near the southernmost limits of its range in Wisconsin. It is a drought-sensitive species. White birch is projected to undergo moderate to significant decreases in habitat suitability across the state, but particularly in northern Wisconsin, due to altered temperature and precipitation patterns associated with climate change.

Management Techniques

- Shelterwood
- Clearcut (with standards; progressive strip)
- Seed tree
- Direct seeding and planting
- Site preparation
- Intermediate treatments
- Pesticide treatments

Management Considerations

- Consider landscape composition and structure (forest type and species composition; successional stage; age structure; stand/patch size; degree of fragmentation, etc.) when planning individual management actions. A variety of age classes and stand sizes provide wildlife and aesthetic value.
- Where possible, manage for larger stands, larger blocks, to increase connectivity with surrounding forest, and to soften sharp transitions between cover types.
- The shelterwood method is most often used for natural regeneration, in conjunction with scarification. Clearcut and seed tree methods may apply in some situations. For both shelterwood and seed tree, it is important to leave the best dominant seed producers to maximize seeding opportunities. Site preparation techniques to provide a suitable seedbed, in conjunction with a good seed crop, are often necessary to promote germination.
- Use ground disturbance during harvest, mechanical scarification, or prescribed fire to prepare a suitable seedbed for white birch seed germination. Anchor chain, salmon, or straight blade are recommended equipment to use for scarification.
- Where white birch is the objective and is associated with aspen, do not cut or disturb the aspen until white birch successfully competes.
- In mixed stands, maintain or increase tree species diversity. Retain and encourage longer-lived species such as oaks, white pine, red pine, and hemlock.
- Increase structural diversity within stands by retaining some large trees, cavity trees and snags, downed woody debris, and by creating canopy gaps of variable sizes.
- Consider extended rotation of some vigorous stands or individual trees on good sites.

